

CDC POLIOMYELITIS SURVEILLANCE REPORT
NO. 128 SEPTEMBER 27, 1957

U.S. Department of Health, Education and Welfare
Public Health Service Bureau of State Services

COMMUNICABLE DISEASE CENTER
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SPECIAL NOTE

Information presented in this report represents a factual summary of preliminary data regarding poliomyelitis and polio-like diseases reported to CDC from State Health Departments, participating diagnostic and reference laboratories, Epidemic Intelligence Service Officers, National Office of Vital Statistics, and other pertinent sources. It is to be emphasized that these reports contain provisional data intended for the information and administrative use of physicians involved in investigation and control of poliomyelitis and polio-like diseases. Anyone desiring to quote this information is urged to contact the person or persons responsible for the items reported in order that the exact interpretation of the report and the current status of the investigation be obtained.

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SUMMARY

1. National incidence of poliomyelitis fell during the past week, with a total of 213 cases reported. However, the number reported as paralytic remained approximately stable at 82.

2. An outbreak of aseptic meningitis involving 50-60 persons has been reported from Lewis County, New York.

3. An unusual proportion of nonparalytic poliomyelitis occurred this summer in Shreveport, Louisiana. Cases from which poliovirus could not be isolated closely resemble those seen in several other aseptic meningitis outbreaks previously reported.

A. CURRENT POLIOMYELITIS MORBIDITY TRENDS

National poliomyelitis incidence dropped during the past week, from 282 cases reported to NOV5 for the week ending September 21 to 213 cases for the week ending September 14. For the comparable week of previous years, there were 765 cases last year, 881 in 1947, and 220 in 1942. A comparison of this years incidence with incidence in 1947 and 1952 through 1957 is presented in Figure 1.

Of the 213 cases listed last week, 82 were reported as paralytic, a decrease of 8 cases from the previous week's total of 90. However, this represents an increase in the proportion reported as paralytic.

Table 1 presents the distribution of total cases by State and region, and of paralytic cases by region for the past six weeks, with six-week totals for the comparable periods of the previous four years.

B. ROUTINE POLIOMYELITIS SURVEILLANCE

1. Under-30-day vaccinated cases - During the week ending September 25, PSU received reports of two paralytic and six nonparalytic poliomyelitis cases with onset within 30 days of a polio vaccine inoculation. The paralytic cases are reviewed below.

- a. Michigan - a case developed symptoms six days following a single left arm inoculation. Site of paralysis, vaccine manufacturer and lot number were not reported.
- b. Florida - a two inoculation case developed symptoms seven days after vaccine inoculation. Site of inoculation was not known; paralysis developed in one arm and both legs. Vaccine used was either Parke, Davis, lot number 029890 (350,000 cc's distributed in June) or Pitman-Moore, lot number 175099 (1,000,000 cc's distributed in June). No other cases have been reported to PSU in association with either of these lots.

2. Triply-Vaccinated Cases - During the week ending September 25 a total of five paralytic and 61 nonparalytic triply-vaccinated cases was reported to PSU. The paralytic cases are listed in Table 2. Previously listed were 58 triply-vaccinated paralytic cases, bringing the 1957 total to 63. A cumulative 1957 total of 344 nonparalytic cases has been reported in triply-vaccinated individuals.

3. Vaccine Distribution - Current and cumulative vaccine releases, shipments, and inventory estimates are presented in Table 3.

C. ASEPTIC MENINGITIS

"Aseptic meningitis" has long been described as a clinical entity. The term was originally applied to central nervous system reactions thought to be of non-specific or allergic etiology. Wallgren (1) first attempted in 1925 to set forth criteria delineating this syndrome from specific acute infections also causing meningeal symptoms, such as syphilis, tuberculosis, helminthiasis, leptospirosis, poliomyelitis, mumps, and typhoid fever.

WALLGREN'S CRITERIA FOR ASEPTIC MENINGITIS*

- I. Acute onset with obvious signs and symptoms of meningeal involvement.
- II. Alteration of cerebrospinal fluid typical of meningitis. The cerebrospinal fluid may show a small or large number of cells.
- III. Absence of bacteria in cerebrospinal fluid, as demonstrated by appropriate direct or cultural technics.
- IV. Relatively short benign course of illness.
- V. Absence of local parameningeal infection (otitis, sinusitis, trauma, etc.), or a general disease which might present meningitis as a secondary manifestation.
- VI. Absence from the community of epidemic disease of which meningitis is a feature.

During later years new and improved laboratory diagnostic techniques demonstrated that the presenting acute clinical picture described by Wallgren actually represented a non-specific syndrome which in many instances was found to occur during the course of infection with a number of etiological agents, including poliomyelitis, mumps, measles,

* Paraphrased from a direct translation from the French by Dr. C. Adair et al. (2).

chicken pox, equine encephalitis, St. Louis encephalitis, herpes simplex, lymphocytic choriomeningitis, leptospirosis, tuberculosis, syphilis, and (in the "antibiotic era") partially treated other bacterial meningitides. The large remaining group of such cases had remained in the "undetermined etiology" category until recent years; good evidence has now accumulated implicating first certain of the Coxsackie and later the ECHO (formerly "Orphan") viruses as etiologic agents in many of these cases (3,4). This year an increasing number of such outbreaks are being recognized (see Table 4 and Figure 2).

These newly recognized viruses may be found concomitantly with other infections. Coxsackie and ECHO viruses have frequently been recovered, both alone and with poliovirus, from individuals ill during polio epidemics (5,6). Just what role these viruses may play in the epidemiology of poliomyelitis has not been delineated. There is some evidence that interference may occur between Coxsackie and poliovirus in tissue cultures (7), animals (8), and man (9,10). The need for further clarification of these interactions and for understanding of the epidemiology of these viruses has been heightened by recent attempts to evaluate poliomyelitis vaccine.

Coxsackie and ECHO viruses are found in healthy individuals (11,12). In addition these viruses have been recovered from individuals with a wide range of clinical illnesses. Caution must be exercised in attaching etiologic importance to viral agents recovered from single-source specimens. A recent example of the possible diagnostic confusion arising in attempting to relate viral agents to disease has been pointed out by Husbner (13):

"We think it is rather well established that pharyngoconjunctival fever is caused by adenoviruses, particularly by Type 3. Studies in volunteers, as well as numerous outbreaks in many areas, confirm this hypothesis. Several outbreaks of this rather well-defined specific disease entity occurred recently in an orphanage nursery in the metropolitan Washington, D.C. area; each episode was associated with the presence of Type 3 adenovirus in the eye and throat secretions of most patients. During one outbreak involving approximately 30 infants, anal swab specimens of a large proportion of these cases yielded, in monkey-kidney tissue cultures, an ECHO-like virus that is yet to be typed definitively. On only two occasions did anal swabs also yield Type 3 adenoviruses. One can imagine, however, what might have occurred at another time and place, when all virus sampling might have been confined to tests of anal swabs taken only during the outbreak, in monkey-kidney tissue cultures. Not only would there have been a high degree of simple association of this ECHO-like virus with pharyngoconjunctival fever, but compared to the isolation of adenoviruses from anal swabs, the much higher isolation rate of ECHO-like agents would have given the appearance of a very significant difference. Fortunately, the orphanage population was under constant surveillance before and after the outbreak, thus providing evidence that most ECHO isolations had been acquired before the outbreak of pharyngoconjunctival fever and were merely carried over into the period

of the outbreak. In this connection, I cannot help but remark how such a hypothetical but alarmingly realistic circumstance resembles some reports of similar but single-specimen studies of "nonparalytic poliomyelitis cases" in which certain types of Coxsackie or ECHO viruses are found to occur more frequently than poliovirus or, for that matter, than other types of Coxsackie and ECHO viruses, data that are often offered in support of the hypothesis that the agent isolated was causally related to the illness."

References

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- 11) Ramos-Alvarez, M. & Sabin, H.B. Characteristics of poliomyelitis and other enteric viruses recovered in tissue culture from healthy American children. Proc Soc Exper Biol & Med 87: 655, 1954.
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Newly Reported Outbreaks

New York

Dr. Gunter Bach of Lewis County and Dr. Jerome Klein, EIS Officer assigned to the New York State Health Department, reports the occurrence of 50-60 cases of aseptic meningitis in Copenhagen and Croghan in Lewis County. The outbreak began approximately September 13 and is still continuing. Primary symptoms are malaise, fever, sore throat, vomiting and diarrhea, severe headache, and stiff neck. The illness usually subsides in two - three days. Entire families have been involved but adults seem to be most severely ill. Lumbar punctures have been done on two patients with a pleocytosis of 35 and 60 leukocytes respectively.

Progress Reports

North Carolina - (see PSU Report #119)

Dr. Paul Glezen, EIS Officer assigned to the North Carolina Board of Health, reports that a community survey of Durham, where eighty cases of aseptic meningitis due to Coxsackie B5 virus have been reported, is near completion. Three hundred families have been interviewed. Histories of simultaneous illnesses were found involving 85 of the 700 individuals in 218 white families interviewed and involving 26 of 313 individuals in 82 Negro families interviewed.

Louisiana - (see PSU Reports #119 and 122)

Dr. Donald B. Carey, EIS Officer, has submitted a preliminary analysis of an unusual incidence of nonparalytic poliomyelitis in Caddo County, Louisiana. As of July 25, thirty-six cases of polio had been reported to the State Health Department of which 30 were nonparalytic. In addition, Dr. George Hauser, Director of the Louisiana State Laboratory, reported that only five polioviruses had been recovered from these cases. Because of this unusual situation (see table below) it was decided to further investigate this outbreak of predominately nonparalytic disease.

POLIO CASES REPORTED IN CADDO PARISH, LA.

Through July 26

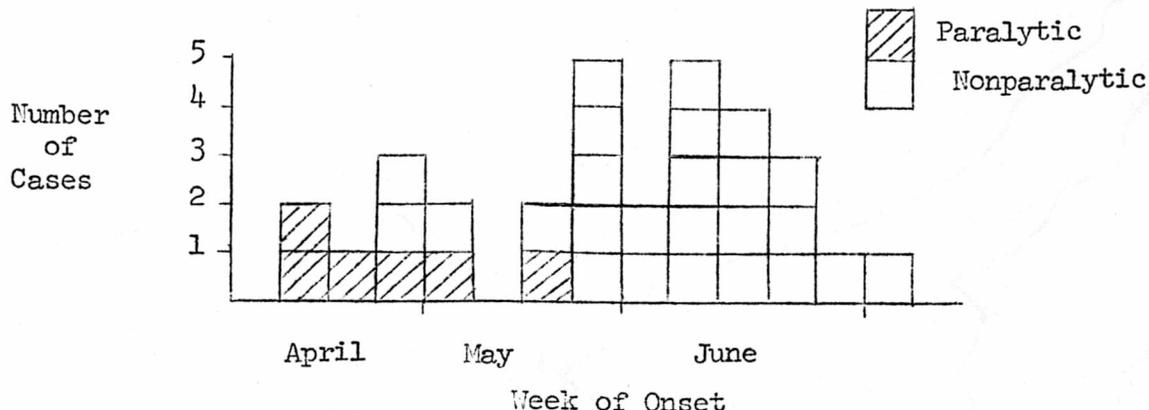
1951 - 1957

<u>Year</u>	<u>Total Cases</u>	<u>Nonparalytic</u>	<u>Paralytic</u>	<u>% Paralytic</u>
1951	127	87	40	68.5
1952	26	36	10	72.2
1953	24	14	10	58.3
1954	36	27	29	48.2
1955	38	27	11	71.0
1956	16	8	3	50.0
1957	36	6	30	16.6

Most of the cases occurred in Shreveport, a city of 164,000. There were no localized concentrations of cases within the city, although most were from lower socio-economic neighborhoods.

The cases by week of onset and age distribution are shown below:

CADDO PARISH POLIO CASES BY WEEK OF ONSET
APRIL - JULY 1957



AGE DISTRIBUTION

Age	0-5	6-10	11-20	31-40	40
Cases	9	16	3	2	0

There were 25 males and 11 females involved. Another unusual feature of this outbreak was the preponderance of Negro cases; twenty-two Negroes and only fourteen white cases. Lumbar punctures on hospitalized cases revealed a pleocytosis ranging from 0-1200 cells with no consistent cell type predominating.

Poliovirus Type I was isolated from nine individuals. A breakdown of symptoms of the twenty-eight cases not yielding poliovirus is shown below:

FREQUENCY OF SYMPTOMS
28 PATIENTS WITHOUT POLIOVIRUS IN STOOLS

Headache	25
Fever	24
Vomiting	18
Stiff Neck	17
Sore Throat	11
Rash	1
Other	15

In nineteen of these patients' families interviewed, there were 102 family contacts. Only two families had more than one individual ill. Ninety rectal swabs and bloods were obtained from family contacts. Laboratory studies of these specimens were underway at the Laboratory of Dr. J. Fox, Tulane University.

A survey of local physicians revealed a concurrent large incidence of gastroenteritis with fever and headache of approximately 48 hours duration; however, it could not be determined whether this represented an inordinately high incidence of such illnesses for the time of year.

Figure 1: CURRENT U.S. POLIO INCIDENCE COMPARED WITH YEARS 1952-1956

DATA PROVIDED BY NATIONAL OFFICE OF VITAL STATISTICS

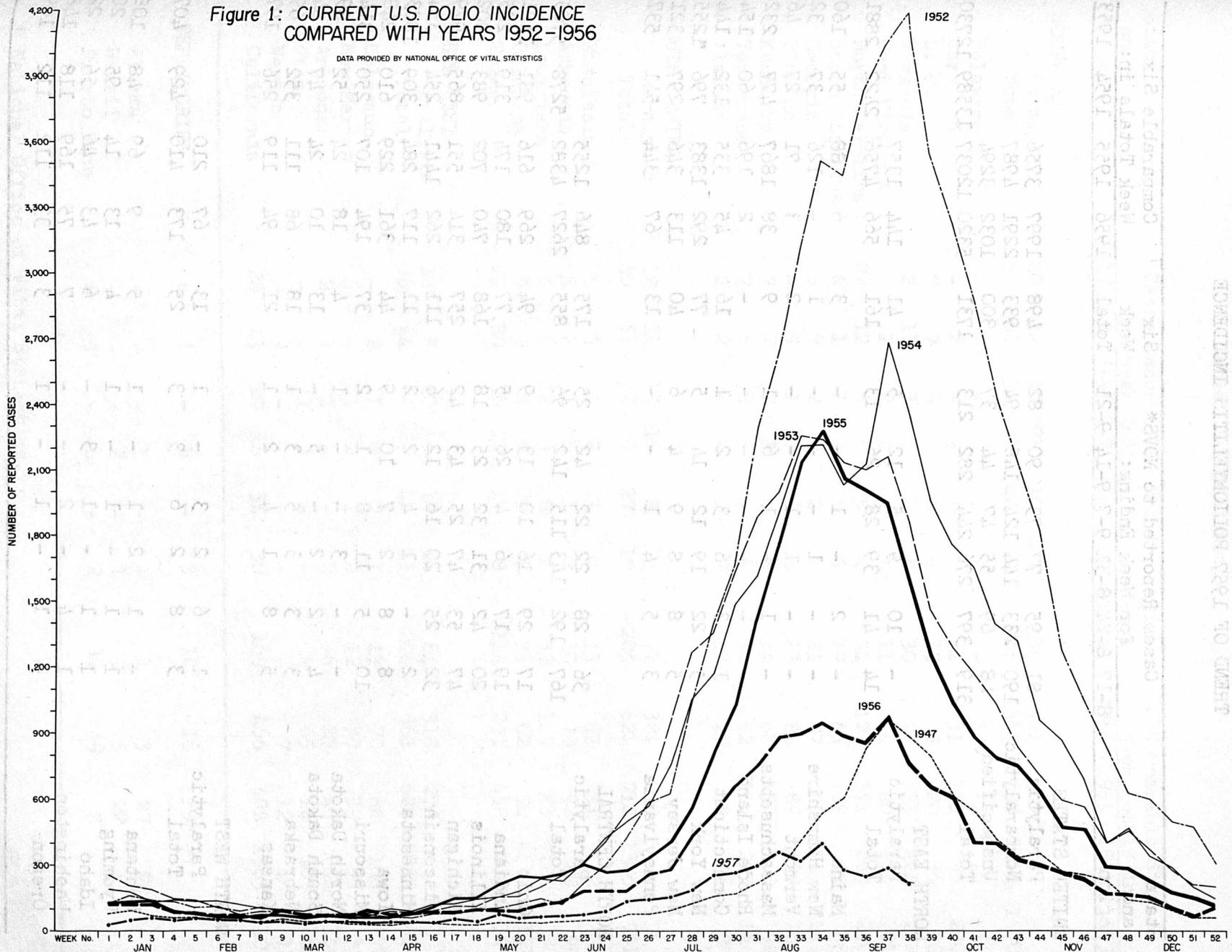


Table 1

TREND OF 1957 POLIOMYELITIS INCIDENCE

State and Region	Cases Reported to NOV5* for Week Ending:						Six Week Total	Comparable Six Week Totals in:			
	8-17	8-24	8-31	9-7	9-14	9-21		1956	1955	1954	1953
UNITED STATES											
Paralytic	81	95	77	73	90	82	498	1997	3756		
Nonparalytic	190	233	144	124	148	94	933	2291	4987		
Unspecified	48	69	55	47	44	37	300	1032	3294		
Total	319	397	276	244	282	213	1731	5320	12037	13589	12730
NORTH EAST											
Paralytic	-	10	9	5	12	5	41	144	1357		
Total	14	41	39	28	26	13	161	566	4756	2422	2881
Maine	-	2	-	1	-	-	3	6	88	55	160
New Hampshire	-	-	1	-	-	-	1	-	126	37	32
Vermont	-	-	1	1	-	-	2	3	71	27	46
Massachusetts	-	1	-	1	6	1	9	38	1867	477	232
Rhode Island	-	-	-	-	-	-	-	2	196	60	154
Connecticut	1	3	6	3	2	1	16	45	335	132	144
New York	5	22	19	12	14	5	77	292	1383	796	1255
New Jersey	5	8	8	9	4	6	40	113	346	297	321
Pennsylvania	3	5	4	1	-	-	13	67	344	541	537
NORTH CENTRAL											
Paralytic	36	28	22	22	42	25	175	846	1255		
Total	167	192	143	115	142	96	855	2627	4382	5278	5705
Ohio	17	29	16	10	13	9	94	269	616	981	1121
Indiana	19	17	6	4	26	5	77	180	174	319	285
Illinois	20	42	31	32	25	18	168	740	702	983	902
Michigan	47	53	47	25	43	42	257	314	551	865	979
Wisconsin	32	25	20	16	12	6	111	262	1441	254	334
Minnesota	2	-	1	4	2	2	11	117	284	309	1083
Iowa	8	8	2	7	10	9	44	361	229	610	248
Missouri	10	5	11	8	1	2	37	194	107	250	314
North Dakota	-	-	3	-	-	1	4	18	24	52	89
South Dakota	4	2	2	-	5	-	13	10	24	47	84
Nebraska	3	3	3	5	3	1	18	68	111	352	69
Kansas	5	8	1	4	2	1	21	94	119	256	197
NORTH WEST											
Paralytic	1	6	2	3	-	1	13	67	210		
Total	3	8	2	6	3	3	25	173	410	429	407
Montana	-	1	2	1	-	1	5	9	69	48	108
Wyoming	1	1	-	1	-	1	4	13	14	95	20
Idaho	1	1	-	1	3	-	6	43	46	56	22
Washington	1	4	-	2	-	-	7	75	169	118	148
Oregon	-	1	-	1	-	1	3	33	112	112	109

* National Office of Vital Statistics.

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Table 1 (Continued)

State and Region	Cases Reported to NOVS* for Week Ending:						Six Week Total	Comparable Six Week Totals in:			
	8-17	8-24	8-31	9-7	9-14	9-21		1956	1955	1954	1953
SOUTH EAST											
Paralytic	20	32	19	21	16	26	134	301	406		
Total	59	61	36	36	42	47	281	665	1098	2115	1570
Delaware	-	-	-	-	-	-	-	13	13	14	16
Maryland	-	2	-	-	1	1	4	31	110	95	230
D. C.	7	7	6	7	6	6	39	5	20	36	20
Virginia	2	11	3	5	4	5	30	98	113	228	272
West Virginia	2	1	2	1	4	1	11	44	80	164	171
North Carolina	22	12	6	5	5	4	54	123	171	267	210
South Carolina	4	1	1	3	5	5	19	45	108	82	48
Georgia	6	7	2	2	2	2	21	77	89	251	114
Florida	-	5	1	7	6	4	23	84	89	339	167
Kentucky	7	7	7	3	4	6	34	64	153	340	98
Tennessee	7	6	8	3	4	6	34	52	104	203	144
Alabama	2	2	-	-	1	7	12	29	48	96	80
SOUTH CENTRAL											
Paralytic	12	11	15	16	8	9	71	321	250		
Total	40	51	32	36	27	19	205	624	718	1306	751
Mississippi	5	4	1	2	1	-	13	92	31	112	69
Arkansas	3	2	1	1	1	2	10	70	52	88	98
Louisiana	6	6	12	3	6	4	37	149	83	121	94
Oklahoma	5	9	2	8	2	5	31	62	94	157	141
Texas	21	30	16	22	17	8	114	251	458	828	349
SOUTH WEST											
Paralytic	12	8	10	6	12	16	64	318	278		
Total	36	44	24	23	42	35	204	663	687	2039	1416
Colorado	-	2	1	2	7	1	13	70	88	166	70
New Mexico	6	-	1	2	1	2	12	30	39	95	32
Arizona	2	1	1	-	-	2	6	25	46	64	140
Utah	-	-	1	3	-	-	4	65	14	109	61
Nevada	-	-	-	-	-	-	-	7	12	40	12
California	28	41	20	16	34	30	169	466	488	1565	1101
TERRITORIES											
	4	1	-	6	-	3	14	16	33		
Alaska	-	-	-	1	-	-	1	3	27	98	6
Hawaii	-	-	-	2	-	1	3	5	22	15	3
Puerto Rico	4	1	-	4	-	2	11	9	2	-	5

* National Office of Vital Statistics.

Table 2

1957 PARALYTIC POLIOMYELITIS CASES FOLLOWING THREE INOCULATIONS OF VACCINE
(Reports September 19 through September 25, 1957)

3 V Case No.	State	County	Ini- tials	Age	Sex	Date lst Symp.	Cerebro- Spinal Fluid	Site of Para.	Dates of Vacc. Inoc.	Mfr.	Lot No.
100	Texas	Harris	DSM	5	F	9-3-57		?	?	?	?
	Comment: Extent of paralysis, both legs.										
101	Wisconsin	Milwaukee	DG	9	M	7-21-57		?	?	?	?
	(Preliminary Report)										
102	Wisconsin	Eau Claire	RLL	14	M	7-21-57		?	?	?	?
	(Preliminary Report)										
103	Texas	Jefferson	CC	3	F	7-26-57		?	?	?	?
	(Preliminary Report)										
104	Texas	Tarrant	RM	15	M	6-?-57		?	?	?	?
	(Preliminary Report)										

Table 3

POLIOMYELITIS VACCINE REPORT through 9-20-57

(Data provided by the Polio Vaccine Activity, BSS, USPHS.
Listed in 1000's of cc's of Net Bottled Vaccine)

VACCINE RELEASED						
<u>Period</u>	<u>Lilly</u>	<u>Parke, Davis</u>	<u>Pitman- Moore</u>	<u>Wyeth</u>	<u>Sharpe & Dohme</u>	<u>Cutter</u>
July	5,047	1,843	1,239	378	1,015	-
August	5,840	3,704	1,339	394	864	-
September 1-20	7,208	1,273	1,314	257	488	-
Cumulative to date	126,791	31,407	30,841	9,623	9,865	401

VACCINE SHIPPED						
<u>Period</u>	<u>NFIP</u>	<u>Public Agencies</u>	<u>Commercial Channels</u>	<u>Export</u>	<u>Total</u>	
1955	13,541	7,893	6,233	-	27,667	
1956	194	45,588	24,784	6,477	77,043	
1957						
January - June	151	36,044	23,760	6,385	66,970	
July	-	4,642	4,903	327	9,871	
August	-	4,133	4,037	1,099	9,269	
September 1-13	585	2,259	2,799	215	5,274	
Cumulative Totals	13,886	101,189	66,515	14,505	196,095	

VACCINE INVENTORY				
<u>Week Ending</u>	<u>Unshipped by Manufacturers</u>	<u>In State and Local Health Departments</u>	<u>In Commercial Channel and Physicians Office</u>	<u>Total</u>
8-30-57	7,565	5,004	2,918	15,487
9-6-57	7,737	6,113	3,933	17,783
9-13-57	6,942	6,248	4,712	17,902

Table 4

Suspected Outbreaks - Aseptic Meningitis
United States 1957

PSU Report No.	State	City	No. of Cases	Clinical Picture*	CSF Findings	Virus Isolation	Laboratory
126	Conn.	Essex	40	F-H-V-S	-	Coxsackie B-5	Conn.St.Health Dept.
126	Conn.	Bristol	15	F-H-V-S, Rash - Diarrhea	-	ECHO 9 Coxsackie A-9	Yale Univ.
122	Ga.	Atlanta	15	H-F-S	Pleocytosis		CDC Virus Lab, (Dr. Kalter)
122	Ga.	Columbus	3	H-F-S	Pleocytosis	(1) Mumps	CDC Virus Lab, (Dr. Kalter)
126	Kansas	Wichita	5 (2)			ECHO 9 (5) Coxsackie A-9 Coxsackie B-5	Kansas St. Bd. of Health (Dr. Hunter)
119, 122	La.	Shreveport	36	H-F-V-S	Pleocytosis 0 - 1200	(9) Polio Type I	Tulane Univ. (Dr. J. Fox)
121	Mich.	Throughout State	Sporadic Cases 21			(2) ECHO 9 (8) Coxsackie B ⁴	Univ.of Michigan (Dr. Brown)
122, 125	Minn.	Throughout State	380	S-H-V-F-E, morbilli- form rash	20-1500 Predominately Lymphocytes	(5) Coxsackie B5 (3) ECHO 9	Minn.Dept. of Health (Dr. Bauer)
128	New York	Copenhagen Croghan	50-60	S-H-V-F	35-60		

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Table 4 (Continued)

PSU Report No.	State	City	No. of Cases	Clinical Picture*	CSF Findings	Virus Isolation	Laboratory
119	N. C.	Durham	80	H-S-F-V, myalgia	100-1000 Predominately Lymphocytes	Coxsackie B-5 (13 Cases) Coxsackie A-9 (1 Case)	Univ. N.C. (Dr. Curnen)
123	N.Dak.	Garrison	11	Slight disorientation	8-12 Cells		N.Dak.State Health Dept. (Dr.M. Kooms) Rocky Mt.Lab USPHS (Dr. C. Ekland)
121	Ohio	Athens	7			Coxsackie	Ohio St. Health Dept. (Dr. Anderson)
121	Ohio	Norwood	5	H-F-S, Rash	Pleocytosis	ECHO Type 9 (CSF)	Dr. Sabin, Children's Hospital, Cincinnati Ohio
121	Ohio	Willard	100	H-F-V-S, / macular rash	Pleocytosis	ECHO 9	(Dr. Robbins, Cleveland, Ohio)
116, 117	Tenn.	Johnson City	54 Hospitalized, 51 Contacts 170 Community	H-F-S-E, varied from mild to severe toxic encephalitis symptoms	Pleocytosis 15-400		Tenn.St. Health Dept. (Mr. J.H. Barrick) and CDC Virus Lab, (Dr. Kalter)
122	Tenn.	Camden	80	H-F-V-S			Tenn.St. Health Dept Lab (Mr. Barrick)
123	Utah	Ogden	20	Aseptic meningitis			Utah St. Health Dept. (Mr. R.S. Fraser)

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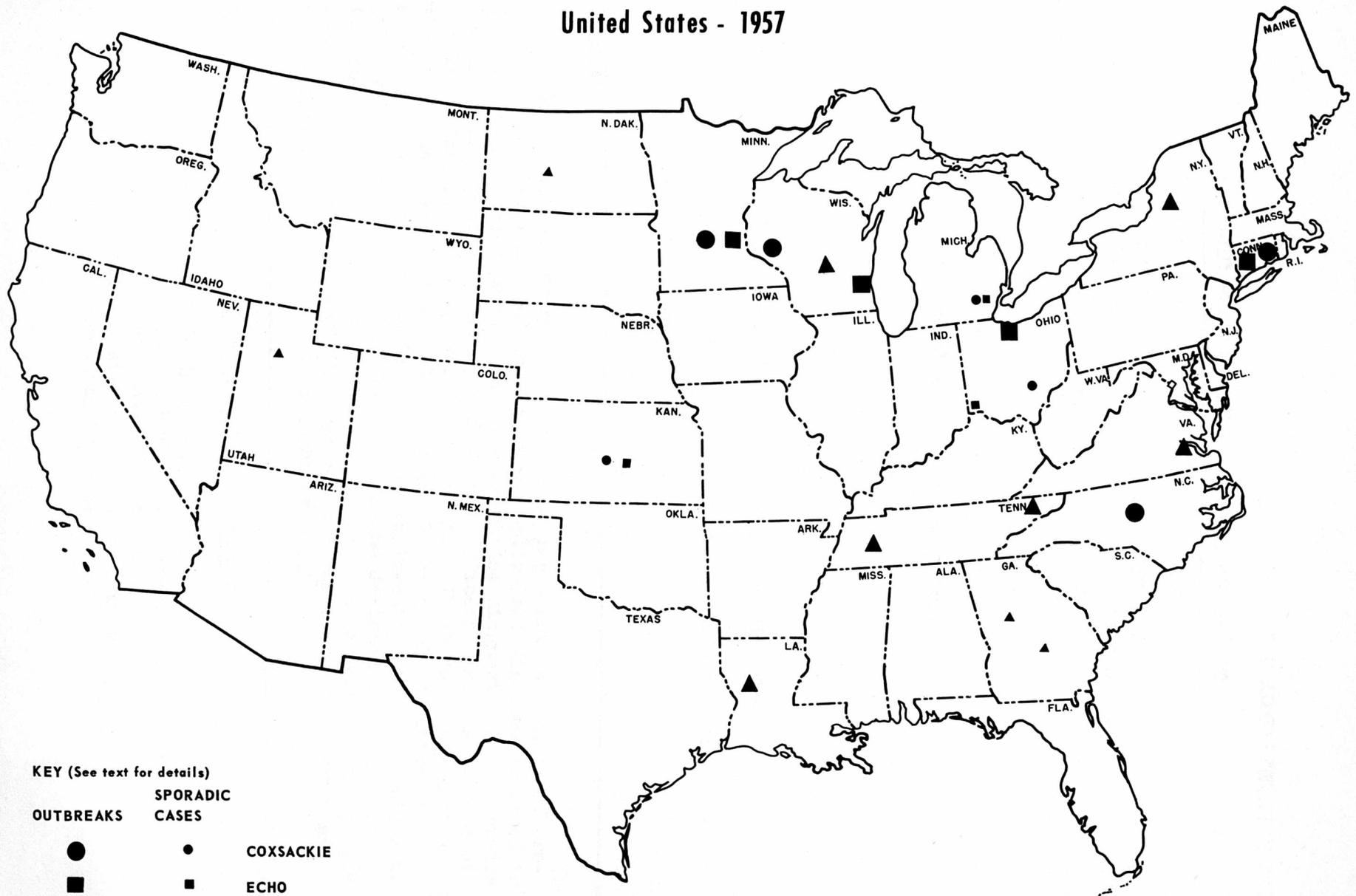
Table 4 (Continued)

PSU Report No.	State	City	No. of Cases	Clinical Picture*	CSF Findings	Virus Isolation	Laboratory
119	Va.	Pennisular Area	65	H-F-V-S	200-300 Predominately Lymphocytes		
120, 121	Wisc.	New Richmond	97	H-F-V-S-E	250-1300 one - 16,000	Coxsackie B	Wisc. St. Health Dept. (Dr. Stoball) CDC Virus Lab (Dr. Kalter)
122	Wisc.	Milwaukee	138 Hospitalized, estimated 10,000 Community	Sudden onset, H-V, rash over face and trunk	300-1000 Lymphocytes	ECHO 9 (CSF)	Dr. Sabin, Children's Hospital, Cincinnati, Ohio. Dr. F. Robbins, Cleveland City Hospital
121	Wisc.	Waupaca	68	F-H-E, Rash	-		Wisc. State Health Dept. (Dr. Stoball)

* H - headache, F - fever, V - vomiting, S - stiff neck, E - eye pain.

ASEPTIC MENINGITIS

United States - 1957



KEY (See text for details)

OUTBREAKS		SPORADIC CASES	
●	●	●	COXSACKIE
■	■	■	ECHO
▲	▲	▲	UNDETERMINED

